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ABSTRACT

A study compared the effects of dramatic enactment as a class activity with more traditional teaching methods on students' acquisition and retention of the concepts taught in the lesson. Subjects were 102 secondary school students from various content classes, randomly assigned to a half-class. Each half-class was taught two lesson topics, half via dramatic enactment on the first topic and half via lecture/seatwork. The instruction was reversed for the second lesson. Lesson concept acquisition and retention were measured, in addition to students' attitudes toward the instructional form. Two students from each half class were interviewed about their participation, thoughts, and emotions during instruction with regard to participation and off-task behavior. As predicted, the results indicated that students' concept acquisition and retention were equivalent during both forms of instruction, but that they favored dramatic enactment as an instructional form. The descriptive data regarding students' cognitive and affective processes indicated that while students were equally attentive during both forms of instruction, dramatic enactment illicited more expressions of interest or excitement during instruction and fewer expressions of fear. (HTH)

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# HIGH SCHOOL STUDENTS' RESPONSES TO DRAMATIC ENACTMENT

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## Abstract

Students in four secondary school classes were randomly assigned to a half-class. Each half-class was taught two lesson topics, half via dramatic enactment on the first topic and half via lecture/seatwork. The instruction was reversed for the second lesson.

Lesson concept acquisition and retention were measured, in addition to students' attitudes toward the instructional form. To provide further understanding of the outcomes, two students from each half-class were interviewed about their participation, thoughts and emotions during instruction with regard to participation and off task behavior.

A repeated measures analysis of variance of the outcome measures indicated that the students' concept acquisition and retention were equivalent during both forms of instruction, but that they favored dramatic enactment as an instructional form. The descriptive data regarding students' cognitive and affective processes indicated that while students were equally attentive during both forms of instruction, but that dramatic enactment elicited more expressions of interest or excitement during instruction and fewer expressions of fear. Dramatic enactment also elicited more statements indicative of higher order thought. The results are discussed in terms of the advantages of using supplemental forms of instruction in general and dramatic enactment in particular.

# High School Students' Responses to Dramatic Enactment

**Renee T. Clift**

Dramatic enactment conveys an image of action, emotional involvement and excitement that transcends the typical secondary school classroom environment. Students have the opportunity to become the persons, objects or ideas that are an integral part of the academic curriculum (Way, 1973; Courtney, 1980; McCaslin, 1981). For example, students may become parts of electrons in an orbital shell (Plati, 1970) or characters in an historical event (Lessinger and Gillis, 1976). A multi-sensory experience evolves as students put themselves into roles that are quite different from typical classroom behavior. Through physical movement, verbal interaction and symbolic communication--all components of any dramatic enactment--students are moved from passive knowledge reception toward experiential contact with the curriculum (Heathcote, 1981; Way, 1971).

Although dramatic enactment is advocated by practitioners from many academic areas and for all grade levels (see, for example, Chesler and Fox, 1966; O'Neill and Lambert, 1982; McCaslin, 1981), there is virtually no research that investigates the claims made by these practitioners, particularly in secondary school settings. Possibly this is because we find little instructional variation in secondary school academic clasrooms (Sirotnik, 1983; Cuban, 1984) and therefore researchers have not been able to study instructional variations such as dramatic enactment. Or, possibly because the focus of recent classroom research has been direct instruction (Rosenshine, 1979;) no one has yet begun serious study of participation in dramatic enactment. Given that variation is, in itself, desirable, (Rosenshine and Furst, 1971) and given compelling arguments in favor of

instructional forms that encourage multiple forms of representation and multiple leraning modalities (Bruner, 1966; Eisner, 1982) an investigation of the effects of dramatic enactment may prove useful to both classroom researchers and practitioners. The present study represents an initial attempt to describe the effects of dramatic enactment on secondary school students' learning and attitudes.

A Review of Research Related to Dramatic Enactment.

In absence of empirical research on dramatic enactment, per se, the research on related instructional forms of simulation and role play provided some indication of the probable outcomes of using dramatic enactment in secondary school classrooms. Recent reviews of the literature on simulations--limited to classroom settings of enacted simulations, simulation games, and role playing concur on three findings of the comparisons between simulations and traditional instructional methods (Cherryholmes, 1966; Greenblatt, 1973; Pierfy, 1977; Clift, 1984):

1. Simulations are equally effective as traditional instruction for teaching facts.

2. Simulations do not appear to have any advantage over traditional methods in promoting the retention of information.

3. Simulations and games promote student interest for the duration of the simulation or game, but this does not necessarily transfer to interest in the subject area or in school in general.

Reviewers also agree that the previous research has been poorly designed and poorly evaluated. Greenblatt (1973) criticized the published research for failing to control for student characteristics. Pierfy (1977) found that most of the 22 studies he reviewed did not randomly assign students to treatments

and that the evaluators were often the simulation or game developers, thus introducing a strong possibility of evaluator bias. In addition, many of the research designs were post test only designs; students' prior knowledge was completely ignored.

Clift (1984) reviewed thirty-nine experimental studies and eleven descriptive studies involving role plays or simulations used in classrooms. She found that many previous experimental studies were evaluations of a specific game or commercial simulation, not investigation of a generic instructional form. The teachers in most of these studies were not the instructional designers, nor were they trained to design or to use such instruction. The studies had very little representative validity (Snow, 1974) and therefore provide no information regarding students' responses to simulations designed by classroom teachers for use with their own students.

A design in which teachers create and teach dramatic enactments to a randomly assigned group of students compared with those same teachers teaching via traditional instruction to another group will very likely yield the following results--if the results follow the patterns of the research cited above:

1. Neither method will show clear superiority on the acquisition or retention of curriculum related concepts.

2. Students who are involved in dramatic enactments will show more interest during instruction than those who are involved in traditional instruction.

Given the methodological confusion of previous research and the absence of clear-cut empirical results on teacher-designed dramatic enactment, those two hypotheses were tested by the present investigation. Still, as Eisner

(1984) has suggested, findings such as those predicted above are hardly surprising. "No difference" in terms of experimental comparisons are very common in educational research. Therefore, the comparative research was extended to include data on students' responses during instruction to learn more about the quality of the classroom experience when teachers use diverse instructional forms. Although previous research on simulations, role plays, and dramatic enactment discusses the potential for such instruction to create qualitatively different classroom experiences (Way, 1973; Shaftel and Shaftel, 198?; Coleman, et al., 1973; Seidner, 1976) no one has yet investigated this potential. Bloom's (1953) investigations of group discussion and Peterson's investigations of direct instruction (Peterson and Swing, 1982) provided evidence that the power of an educational treatment may not surface on post tests. The following report of a comparison of dramatic enactment and traditional instruction includes measures of student thoughts and feelings during instruction. Such data may help to explain the outcome data, and may serve as a guide to future investigations.

## Methodology

Subjects. 102 students (22 from an eighth grade social studies class, 23 from a 10th grade geometry class, 29 from a 12th grade English literature class, and 28 from a 10th grade biology class) agreed to participate in the study. Teachers classified the students as high or low class achievers based on course grades for three quarters of the school year and as introverts or extroverts based on scores on the Eysenck Personality Inventory. This produced four "student characteristic" categories from which students were randomly assigned to a half-class.

Teachers. The teachers for this study were the regular classroom teachers for each of the four classes. All teachers, interns completing training at a major Western university, were trained to use both dramatic enactment and traditional instruction. The teachers had used both forms of instruction in classes prior to the beginning of the study.

Lessons. Each teacher prepared two, two-day lessons focussing on a major concept that was already a part of their curriculum. The teachers prepared two forms of each lesson, one using dramatic enactment and one using lecture/seatwork as the primary instructional activity. All lessons followed the following prototype:

Day 1. Introduction to concepts.

Primary instructional activity (dramatic enactment or lecture).

Discussion of activity

Day 2. Review of day 1.

Primary instructional activity (dramatic enactment or seatwork assignment).

Discussion of entire lesson.

The introduction, review, and discussion questions were standardized within each lesson topic. Time allotted to each section of the lesson was standardized across all lessons.

Procedure. The teachers chose their lesson topics and designed their dramatic enactment. Then they met with the experimenter to design both lessons, using both instructional forms. The teachers brainstormed ideas for the lecture/seatwork lessons to make those lessons as interesting and exciting as possible. They also timed each section of each lesson so that they would be able to teach comparable lessons, using comparable amounts of time for each

lesson. Following the initial planning, the teachers taught the first lessons--using dramatic enactment with one half-class and lecture/seatwork with the other half-class. Two weeks later they taught the second lesson. The half-classes received the opposite instructional form for this lesson. Treatment order was counterbalanced across classes.

Instruments. Concept acquisition and retention were measured by students' responses on a three-item short answer test asking for definitions and examples of the lesson concept. Students completed a pretest several days before a lesson, a post test one day after a lesson, and a delayed post test four to six weeks after a lesson. Attitudes were measured by a twelve item rating scale administered one day following each lesson. (Cronbach's alpha reliability = .85) and by a short answer survey administered four to six weeks after a lesson. Specific items for all instruments can be found in Clift, 1984.

All lessons were videotaped. Two students, randomly selected from each half-class, were interviewed using a stimulated recall procedure (Bloom, 1953; Kagan, 1980) immediately after the second lesson. The stimulated recall protocols probed students actions, thought, and feelings during eight points of each lesson--one point during each day's introduction, two points during each day's dominant activity, and one point during each day's debriefing discussion.

## Results

### Concept acquisition and retention.

Two uninformed coders independently scored all short answer tests from an

answer guide supplied by the classroom teachers. Scores ranged from "0", meaning no answer or a totally incorrect answer, to "4", meaning totally correct answer that went beyond information supplied by the teacher. Gain scores were computed to yield an acquisition score for each test item and then all item scores were averaged to yield a concept acquisition score. Post test scores were subtracted from delayed post test scores for each item to yield item retentions scores. These were averaged to yield a concept retention score for each student. Students who were absent during part of a lesson or during the test period were excluded from the analysis of that lesson.

A class-by-treatment analysis of variance for each lesson revealed no main effects of treatment (Lesson 1, $F = 3.26$, $p < .07$; Lesson 2, $F = 1.90$, $p < .17$) for either lesson, but that the class-by-treatment interaction was significant for both lessons (Lesson 1, $F = 4.01$, $p < .01$); Lesson 2, $F = 4.22$, $p < .009$). A comparison of treatment means for each class shows that dramatic enactment produced higher gains in three classes for Lesson 1 and for one class in Lesson 2. Pooling across classes and across lessons (for a discussion of their analysis, see Winer, 1971, pg. 212-217) no main effect was found for treatment ($F = .06$, $p. < .8$).The analysis tables are provided in Appendices 1 and 2.

Similar analyses of variance for retention revealed similar results. although treatmert showed significance for Lesson 1 ($F = 4.74$, $p < .03$) it did not show significance for Lesson 2 ($F = 0.01$, $p < .92$). Although the class means for dramatic enactment were higher in three classes for Lesson 1, they were lower in three classes for Lesson 2. The pooled analysis showed no main effect for treatment ($F = .87$, $p < .35$). The analysis tables are given in Appendix 3 and 4. Neither lecture/seatwork nor dramatic enactment were

superior in promoting the acquisition or retention of lesson concepts.

Attitude toward the instructional method

The students' responses on the general attitude surveys were standardized such that a response of "1" meant highly positive and a response of "6" meant highly negative for the general attitude questionnaire. The numerical responses to the comparative attitude survey were categorized and the narrative responses were used to help explain the numerical data.

A class-by-treatment analysis of variance of the students' ratings of the method of instruciton showed no difference between the methods (Lesson 1, $F = 1.88$, $p. < .17$; Lesson 2, $F = 2.63$, $p < .11$), although the class means favored dramatic enactment in six of the eight instances). The pooled analysis showed a significant effect for darmatic enactment ($f = 3.86$, $p < .0001$, see Appendices 5 and 6).

Data from the comparative attitude survey are summarized in Table 1. A majority of the students in all four classes expressed a desire for both forms of instruction. Their short answer responses amplify the numerical data:

"I prefer a mixture...because if the class is centered on just one activity it becomes boring and repetitious."

"The two activities mentioned are both good ways for learning. In dramatic enactment the participants can really get the feel of things. In lecture/seatwork the speaker can teach the listeners a lot more and more efficiently."

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Insert Table 1 about here

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The students perceived different strengths for each form of instruction.

Table 2 summarizes these responses. Lecture/seatwork,or a combination of the two,was judged as appropriate for teaching a given topic, but dramatic enactment was judged more effective for teaching about people's feelings in all four classes, and for facilitating curriculum related problem solving in all classes but the math class.

Students' short answer responses indicated that lectures and seatwork offered a chance to learn more details about a topic and often produced more understanding with regard to a particular topic. One science student described learning as a result of lecture seatwork as profitable, but boring, "I learn a lot about the technical and academic aspects of the subject. It gives me a knowledgeable understanding of the subject (if I can stay awake during a lecture)."

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Insert Table 2 about here

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Students in all classes recommended dramatic activities as a break from the monotony of everyday school life. As one student put it, "It gives you something to look forward to in school." In their opinion, dramatic enactment helped them visualize concepts or situations and provided insight into the feelings and emotions of peers' as well as historical or literary characters. A math student added that dramatic enactments are not only fun, but they provide a different type of learning experience for her. "I prefer to do both kinds of activities because with the lecture/seatwork activities I can listen to the teacher explain the lesson and then try to work problems out on my own--think more about what the concepts are saying. Then, with the dramatic activities, the class gets to learn from one another. Also, it is a very

different approach to learning, and I am more patient and interested and willing to learn."

Students' experiences during instruction

The stimulated recall data, collected from two students in each half-class, provided an "on-line" indication of the quality of the classroom experience during both forms of instruction. The students' reports of their actions, thoughts, and feelings at eight points during each of the two lessons were placed into three categories: participation, cognition, and emotion. Two independent coders judged the students' responses within each category. The percentage of agreement ranged from 72% (cognitive) to 83% (participation). Following the initial coding the raters conferred on each category to reach 100% agreement.

Table 3 provides a summary of the percentage of responses within each category for each treatment. A complete description of each code within the categories can be found in Clift, 1984. The general results of all three categories suggest that there are no differences between dramatic enactment and lecture/seatwork on student participation or on lower order thought. There were more instances of higher order thought and fewer instances of lesson-irrelevant thought during dramatic activity. Although students expressed boredom during both forms of instruction, dramatic enactment elicited more expressions of interest and enthusiasm. Students reported more apprehension during lecture/seatwork activities and more topic-specific emotions during dramatic enactment. This general pattern held across all four classes.

Insert Table 3 about here.

In summary, a comparison of eight teacher-designed and teacher-taught dramatic enactments and similar lecture/seatwork sessions produced outcomes similar to those of earlier investigations of simulations and games: while neither method proved superior in promoting concept acquisition and retention, there is an indication that students enjoyed the dramatic enactments more. The results of the stimulated recall data suggest that the students had an equal opportunity to learn during both instructional forms, but that the quality of the classroom experience differed between forms. When students were engaged in dramatic enactment they had more opportunity to solve curriculum related problems and to use higher order thinking processes. There was also a difference in the emotions reported during the two activities. During dramatic enactment, the students were more aware of their interest or excitement with the classroom process. There was less fear of being singled out by the teacher and having the class's attention drawn to one's ignorance of an answer. In the next section these results will be discussed in terms of their implications for classroom researchers and for practitioners.

## Discussion

Classroom comparisons face an inherent problem that no one has yet resolved: how does one achieve experimental control when the variation in classrooms is so diverse that we cannot even identify all of the salient variables, much less control them? Classroom researchers operating within

experimental paradigms often sacrifice "control" in hopes of achieving "reprsentativeness" and sacrifice generalizability to the individuality of each classroom environment. The alternative to comparative research, descriptive accounts of individual classrooms raise different questions. It seldom helps us understand the outcomes of instruction, although it provides rich information on the process. The present study is an example of a more eclectic approach to classroom research (for a discussion of this approach see Shulman, in press).

The study was designed in the process-process-product tradition, with the conscious assumption that the results would not provide conclusive evidence regarding the superiority of dramatic enactment or lecture/seatwork. Student process data, more a part of the qualitative, hypotheses generating tradition, was gathered to supplement and to help explain the outcome data. Thus, the following discussion does not advocate one instructional form over another. Rather, it describes the nature of both instructional processes.

From the teachers, students, and classes studied by the present investigation, we can conclude that dramatic enactment does not have a harmful effect on students' ability to define and give examples of curricular concepts. This one finding may lend support to those researchers and practitioners who argue in favor of educational drama. This argument is further strengthened when coupled with the finding that secondary school students have positive attitudes toward dramatic enactment. But the quantitative findings reported here only describe the surface of the educational experience. The importance of this study lies in the possibility that using two different instructional produces qualitatively different cognitive and affective experiences for students. To clarify these

differences it is helpful to look at the students' responses to each form separately.

A description of lecture/seatwork instruction.

Students do not loathe lecture/seatwork activities, nor do they suggest excluding such activity from the classroom. The students perceive lectures as organized, efficient ways of covering large quantities of course material. In lecture situations, the task of assigning meaning and of highlighting important points belongs to the lecturer, who is typically the classroom teacher. Thus, the teacher cues the students, highlighting specific knowledge of the curriculum--knowledge that may one day appear on some type of formal evaluation. Several of the students in this study preferred lecture/seatwork assignment because working with peers to create learning situations was, to them, a waste of time. These students felt that the teacher was the proper source of curricular knowledge.

When lecture information is combined with seatwork, the students have an opportunity to consolidate the information they received from lectures and to check their understanding of a given topic. Seatwork is useful to the extent that it provides this opportunity. In cases where students do not perceive a need to reflect on the topic, the seatwork assignment is perceived to be useless. However, such assignments often inform the teacher of gaps in students understanding on an individual basis. Thus, seatwork assignments are important means of feedback for both student and teacher.

The exchange of information and meaning are individual communications from teacher to student and from student back to teacher. Some of the students in the present study feared being singled out because of incomplete knowledge or because of a perceived inability to express their perceived

knowledge. Most of the students, however, took the exchange as an accepted classroom routine and did not question the private nature of the learning process.

A description of dramatic enactment.

Dramatic enactment is a break from the normal classroom routine in that students open their work to peer comment and evaluation. This change seems to accomplish more than the introduction of novelty, for the students in this study reported less fear and more higher order thinking during class session. Through the enactment (and through evaluations of enactments) students not only receive information deemed necessary by their teachers, they also have an opportunity to play with that information, to solve problems using that information and to observe other students' solutions. Working together to elaborate and illustrate curriculum topics, the curriculum is interpreted in conjunction with the teacher and one's peers. Thus, students have an emotional stake in the classroom events that is unlike the behavior-grade exchange described by Doyle (1978).

This generates three important factors that can effect classroom processes. The first is cognitive. Students are presented with a problem--how to create a scenario that will accomplish the task set by the teacher, within the parameters set by the teacher. An example from the present study is the cost analysis of building a pyramid to "win" the Pharoah's contract without resorting to slave labor. The second is social. Students will be publicly evaluated by their peers as their scenarios are shared with the entire group. The students who wrote a clever commercial representing Mothers Against Drunk Driving were eager to share their work with the rest of the class. Students will be publicly evaluated by their peers as

their scenarios are shared with the entire group. The third is emotional. Students must deal with their own emotions as they work through problems that interface with the emotions of other students. For example, an eighth grader attempting to persuade an official to sign his petition worked to create successful persuasive scenarios and then had to deal with the unsuccessful result. His insight into bureaucratic regulations, "FRUSTRATION."

In summary, dramatic activity and lecture/seatwork activity can perform supplemental functions in secondary school classrooms. The latter is an efficient way of transmitting knowledge and of verbally anchoring the new information to prior knowledge. Dramatic activity permits exploration of situations outside of typical classroom interactions and encourages students to work through those situations--particularly situations involving the emotional or the non-rational aspects of literature, science, and history.

Implications

The present study has implications for practitioners and for researchers. Practitioners, including supervisors, principals, and classroom teachers, should not be discouraged from using a variety of instructional forms. Although research has focussed on direct instruction (and to a lesser extent on group discussion) there is a strong probability that other forms, such as dramatic enactment, promote higher order thought and stimulate an excitement with the classroom learning process. Researchers should be encouraged to develop fine-grained assessments that will describe the relationships between diverse instructional forms and their effects on the students' classroom experiences.

The present study, a blend of two research methodologies, indicates that such relationships are there. There is some indication that students'

emotions are affected by variation in classroom experiences, that students' levels of thinking are affected, and that they perceive these effects very clearly. But the present study is limited to eight instances, with students in four secondary school classrooms, by the narrow outcome and retention measures, and by the possibility that a "Hawthorne effect" biased the results. For those of us who would study classroom variations and their effects on students, it will be necessary to find natural occurances of such variation, to use multiple assessments of their effects on students, teachers, and the interactions between teaching and learning. When these are described and when relationships are documented we will have made an important contribution to accurately documenting effective teaching.

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TABLE 1

Students' preferences for instructional methods

| | dramatic activities | lecture/ seatwork | both |
|---|---|---|---|
| across classes | 17% | 15% | 66% |
| social studies | 19% | 23% | 57% |
| math | 9% | 9% | 81% |
| English | 16% | 8% | 70% |
| science | 24% | 20% | 56% |

TABLE 2

Student perceptions about their own learning.
Percentage of students responding. N-92

| "I learn more about _____" | lecture/ seatwork activities | dramatic activities | either activity |
|---|---|---|---|
| the topic | 36% | 27% | 36% |
| people's feelings | 7% | 74% | 16% |
| solving problems associated with a topic | 21% | 50% | 28% |

TABLE 3

Stimulated recall

Percentage of students' response by treatment.
Total number of responses are given in parentheses.

Participation

| | active | passive | inattention | total |
|---|---|---|---|---|
| dramatic activity | 32.03 (41) | 54.69 (70) | 13.28 (17) | 100 (128) |
| lecture/ seatwork | 26.89 (32) | 58.82 (70) | 14.29 (17) | 100 (119) |

Cognition

| | lower-order thinking | higher-order thinking | unrelated thinking | total |
|---|---|---|---|---|
| dramatic activity | 32.50 (39) | 44.17 (53) | 23.33 (38) | 100 (120) |
| lecture/ seatwork | 36.44 (43) | 25.42 (30) | 38.14 (45) | 100 (118) |

Emotion

| | interest/ excitement | emotional response to lesson topic | fear/ apprehension | boredom | total |
|---|---|---|---|---|---|
| dramatic activity | 55.36 (62) | 8.93 (10) | 11.61 (13) | 24.11 (27) | 100 (112) |
| lecture/ seatwork | 36.54 (38) | .96 (1) | 27.88 (29) | 34.62 (36) | 100 (104) |

## APPENDIX 1

Concept acquisition: class-by-treatment analysis of variance, lessons one and two.

Lesson 1
N=85

| Source | df | SS | FF | p. |
|---|---|---|---|---|
| Class | 3 | 20.63 | 14.24 | .0001 |
| Treatment | 1 | 1.58 | 3.26 | .07 |
| Class by treatment | 3 | 5.81 | 4.01 | .01 |

Lesson 2
N=76

| Source | | | | |
|---|---|---|---|---|
| Class | 3 | 51.10 | 29.89 | .0001 |
| Treatment | 1 | 1.08 | 1.90 | .17 |
| Class by treatment | 3 | 7.21 | 4.22 | .0086 |

## APPENDIX 2

Concept acquisition: analysis of variance of difference scores across all interferences. N=65

| Between Subjects | df | SS | F | p |
|---|---|---|---|---|
| Sources | | | | |
| Class half | 1 | 1.44 | 1.05 | .310 |
| Students within class halves | 64 | 87.64 | 2.05 | .002 |
| Within Subjects | | | | |
| Source | | | | |
| Lesson | 1 | 7.27 | 10.90 | .002 |
| Drama | 1 | 0.04 | 0.06 | .800 |
| Error | 64 | 42.70 | | |

## APPENDIX 3

Concept retention: analysis of variance for lessons one and two.

Lesson 1
N=80

| Source | df | SS | F | p. |
|---|---|---|---|---|
| Class | 3 | 1.73 | 3.41 | .02 |
| Treatment | 1 | 0.80 | 4.74 | .03 |
| Class by treatment | 3 | 0.98 | 1.94 | .13 |

Lesson 2
N=72

| Source | | | | |
|---|---|---|---|---|
| Class | 3 | 0.17 | 0.26 | .86 |
| Treatment | 1 | 0.002 | 0.01 | .92 |
| Class by treatment | 3 | 1.27 | 1.87 | .14 |

## APPENDIX 4

Concept retention: analysis of variance of difference scores across all classes. N=64

| Between Subjects | df | SS | F | p. |
|---|---|---|---|---|
| Source | | | | |
| Group | 1 | .04 | 0.24 | .63 |
| Students within groups | 63 | 10.74 | 0.68 | .93 |
| Within Subjects | | | | |
| Source | | | | |
| Lesson | 1 | 0.09 | .35 | .55 |
| Drama | 1 | 0.22 | 0.87 | .35 |
| Error | 63 | 15.72 | | |

## APPENDIX 5

Student attitudes: analysis of variance for lessons one and two.

Lesson 1
N=88

| Source | df | SS | F | p. |
|---|---|---|---|---|
| Class | 3 | 0.29 | 0.37 | .78 |
| Treatment | 1 | 0.50 | 1.88 | .17 |
| Class by Treatment | 3 | 0.90 | 1.12 | .35 |

Lesson 2
N=84

| Source | | | | |
|---|---|---|---|---|
| Class | 3 | 0.59 | 0.72 | .55 |
| Treatment | 1 | 0.72 | 2.63 | .11 |
| Class by treatment | 3 | 1.72 | 2.08 | .11 |

## APPENDIX 6

General attitudes: analysis of variance across all classes. N=73

| Between Subjects | df | SS | F | p |
|---|---|---|---|---|
| Source | | | | |
| Class half | 1 | 0.08 | 0.20 | .6600 |
| Students within class halves | 72 | 30.97 | 3.86 | .0001 |
| **Within Subjects** | | | | |
| Source | | | | |
| Lesson | 1 | 0.05 | 0.42 | .520 |
| Drama | 1 | 1.32 | 11.82 | .001 |
| Error | 72 | 8.02 | | |